Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the Amended Sheets of application:

Listing of Claims:

Claims 1-13. (Cancelled)

Claim 14. (new) A method of qualification of telephone lines as signal conductors for suitability for data transmissions, comprising:

(a) providing, for each of a plurality of frequencies within a preselected frequency range, a test signal into a telephone line and measuring a reflection signal of the test signal, the reflection signal constituting a portion of the test signal reflected on the input impedance of the telephone line, said measuring including measuring any phase shift in the reflection signal with respect to the test signal at the respective frequency,

(b) determining a first derivative of the phase shift as a function of frequency;

(c) determining a second derivative of the phase shift as a function of the frequency,

(d) determining if the second derivative has at least one mathematical sign change;

(e) outputting an indication of a suitability state based on whether at least one mathematical sign change is determined to exist in the second derivative.

Claim 15 (new). The method of qualification of telephone lines according to claim 1, wherein each test signal comprises a sinusoidal AC voltage.

Claim 16 (new). The method of qualification of telephone lines according to claim 1, wherein, step a) further comprises employing a phase discriminator to measure any phase shift in the reflection signal.

Claim 17 (new). The method of qualification of telephone lines according to claim 1, wherein step a) further comprises employing a quadrature demodulator to measure any phase shift in the reflection signal.

Claim 18 (new). The method of qualification of telephone lines according to claim 1, wherein the preselected frequency range is substantially from 1.0 kHz to 5.0 kHz.

Claim 19 (new). The method of qualification of telephone lines according to claim 1, wherein the plurality of frequencies comprises a sequence of frequencies having logarithmic intervals between individual frequencies of the sequence of frequencies.

Claim 20 (new). The method of qualification of telephone lines according to claim 1, further comprising, prior to step c), averaging individual phase shifts in order to smooth them in a profile.

Claim 21 (new). The method of qualification of telephone lines according to claim 7, further comprising, carrying out median formation in the averaging of individual phase shifts.

Claim 22 (new). The method of qualification of telephone lines according to claim 8, further comprising, prior to step c), generating smoothed phase shifts at regular intervals from each other.

Claim 23 (new). The method of qualification of telephone lines according to claim 1, wherein the indication of a suitability state comprises an indication that load coils are detected in the telephone line.

Claim 24 (new). A method of qualification of telephone lines as signal conductors for suitability for data transmissions, comprising:

(a) using a DSL modem to provide, for each of a plurality of frequencies within a preselected frequency range, a test signal into a telephone line,

(b) measuring a reflection signal of the test signal, the reflection signal constituting a portion of the test signal reflected on the input impedance of the telephone line, said measuring including measuring any phase shift in the reflection signal with respect to the test signal at the respective frequency,

(c) determining a first derivative of the phase shift as a function of frequency;

(d) determining a second derivative of the phase shift as a function of the frequency,

(e) determining if the second derivative has at least one mathematical sign change;

(f) outputting an indication of a suitability state based on whether at least one mathematical sign change is determined to exist in the second derivative.

Claim 25 (new). The method according to claim 11, wherein step a) further comprises using an existing test module of the DSL modem to provide, for each of the plurality of frequencies within the preselected frequency range, the test signal into the telephone line.

Claim 26 (new). The method according to claim 11, wherein the DSL modem is at least one of the group consisting of: an ISDN modem, a VDSL modem, an ADSL modem, an SHDSL modem and an SDSL modem.

Claim 27 (new). A method of qualification of telephone lines as signal conductors for suitability for data transmissions, comprising:

(a) providing, for each of a plurality of frequencies within a preselected frequency range, a test signal into a telephone line and measuring a reflection signal of the test signal, the reflection signal constituting a portion of the test signal reflected on the input impedance of the telephone line, said measuring including measuring any phase shift in the reflection signal with respect to the test signal at the respective frequency,

(b) determining a first derivative of the phase shift as a function of frequency;

(c) filtering the first derivative;

(d) determining a second derivative of the phase shift as a function of the frequency,

(e) determining if the second derivative has at least one mathematical sign change;

(f) outputting an indication of a suitability state based on whether at least one mathematical sign change is determined to exist in the second derivative.

Claim 28 (new). The method of qualification of telephone lines according to claim 14, wherein the preselected frequency range is substantially from 1.0 kHz to 5.0 kHz.

Claim 29 (new). The method of qualification of telephone lines according to claim 14, wherein the plurality of frequencies comprises a sequence of frequencies having logarithmic intervals between individual frequencies of the sequence of frequencies.

Claim 30 (new). The method of qualification of telephone lines according to claim 14, wherein step c) further comprises averaging subsets of the first derivatives in order to smooth them in a profile.

Claim 31 (new). The method of qualification of telephone lines according to claim 17, further comprising, carrying out median formation in the averaging of subsets of the first derivatives.

Claim 32 (new). The method of qualification of telephone lines according to claim 18, wherein step c) further comprises generating smoothed phase shifts at regular intervals from each other.

Claim 33 (new). The method of qualification of telephone lines according to claim 14, wherein the indication of a suitability state comprises an indication that load coils are detected in the telephone line.